What is claimed is:

1. An apparatus for controlling a position of a fluid operated cylinder having at least one fluid chamber defined by a piston located within a housing for movement between first and second end limits of travel, the apparatus comprising:

a multi-valve manifold having at least one fluid inlet port, at least one fluid outlet port and at least one fluid exhaust port;

at least one electrically actuated proportional flow control valve connected to the multi-valve manifold and in fluid communication with each inlet port and each outlet port of a fluid operated cylinder to be controlled for selectively and proportionally controlling fluid flow into and out of the at least one fluid chamber of the fluid operated cylinder to be controlled;

at least one pressure sensor for measuring fluid pressure with respect to each chamber of the fluid operated cylinder to be controlled;

at least one discrete position sensor associated with the fluid operated cylinder to be controlled for sensing a discrete predetermined position of the piston within the cylinder to be controlled; and

a control program operably connected to the at least one valve, the at least one pressure sensor, and the at least one position sensor for controlling actuation of the at least one valve in response to pressure measured by the at least one pressure sensor and in response to position measured by the at least one position sensor.

2. The apparatus of claim 1, wherein the at least one discrete position sensor further comprises:

a first position sensor located adjacent a midpoint of the operating stroke of the fluid operated cylinder; and

a second position sensor located adjacent one end of travel of the piston in the cylinder to be controlled for providing soft stop deceleration of the piston prior to contact with an end wall of the cylinder to be controlled defining the at least one chamber.

3. The apparatus of claim 1 further comprising:

the at least one electrically actuated proportional flow valve including a first valve associated with the first expandable fluid chamber for selectively and proportionally controlling fluid flow into the first expandable fluid chamber and a second valve associated with the first expandable fluid chamber for selectively and proportionally controlling fluid flow out of the first expandable fluid chamber.

4. The apparatus of claim 1 further comprising:

the at least one expandable fluid chamber including a first expandable fluid chamber adjacent one end of travel of the piston in the cylinder to be controlled and a second expandable fluid chamber adjacent another end of travel of the piston in the cylinder to be controlled.

5. The apparatus of claim 4 further comprising:

the at least one pressure sensor includes a first pressure sensor associated with the first expandable fluid chamber and a second pressure sensor associated with the second expandable fluid chamber.

6. The apparatus of claim 4 further comprising:

the at least one discrete position sensor including a first position sensor located adjacent a midpoint of the fluid operated cylinder operating stroke to be controlled, a second position sensor located adjacent one end of travel of the piston in the cylinder to be controlled for providing soft stop deceleration of the piston prior to contact with an end wall of the cylinder to be controlled defining one chamber, and a third position sensor located adjacent an opposite end of travel of the piston in the cylinder to be controlled for providing soft stop deceleration of the piston prior to contact with an end wall of the cylinder to be controlled defining another chamber.

7. The apparatus of claim 1 further comprising:

the control program for initializing a home position when the piston is sensed by the at least one discrete position sensor located adjacent the midway position with respect to the cylinder to be controlled.

8. The apparatus of claim 1 further comprising:

the control program for calculating a required pressure in the at least one expandable fluid chamber for moving the piston a desired distance within the cylinder to be controlled from the discrete centered position located midway with respect to the cylinder to be controlled, and for controlling the at least one electrically actuated proportional flow valve to obtain the calculated pressure within the at least one expandable fluid chamber corresponding to the desired distance of movement for the piston within the cylinder to be controlled.

9. The apparatus of claim 1 further comprising:

means for biasing the piston toward the discrete centered position with respect to the cylinder to be controlled.

10. A method for controlling a fluid operated cylinder having at least one fluid chamber defined by a piston located within a housing for movement between first and second end limits of travel, the method comprising the steps of:

mounting at least one electrically actuated proportional flow valve on a multi-valve manifold having at least one fluid inlet port, at least one fluid outlet port and at least one fluid exhaust port;

selectively and proportionally controlling fluid flow into and out of the at least one fluid chamber of the fluid operated cylinder to be controlled with at least one electrically actuated proportional flow valve connected to each port of the fluid operated cylinder to be controlled;

measuring fluid pressure with respect to each chamber of the fluid operated cylinder to be controlled with at least one pressure sensor;

sensing a discrete position of the piston operating stroke within the cylinder with at least one discrete position sensor located adjacent a midpoint of the fluid operated cylinder to be controlled; and

controlling actuation of the at least one valve in response to pressure measured by the at least one pressure sensor and in response to position measured by the at least one position sensor with a control program operably connected to the at least one valve, the at least one pressure sensor, and the at least one position sensor.

11. The method of claim 10, wherein the position sensing step with the at least one discrete position sensor further comprises the steps of:

locating a first position sensor adjacent a midpoint of the fluid operated cylinder; and

locating a second position sensor adjacent one end of travel of the piston in the housing;

sensing a discrete position adjacent one end of travel of the piston with respect to the housing with the second position sensor; and

decelerating the piston to a soft stop prior to contact with an end wall of the housing defining the at least one chamber with the control program in response to the second position sensor.

12. The method of claim 10, wherein the controlling fluid flow step with at least two electrically actuated proportional flow valves further comprises the steps of:

providing a first valve associated with the first expandable fluid chamber for selectively and proportionally controlling fluid flow into the first expandable fluid chamber; and

providing a second valve associated with the first expandable fluid chamber for selectively and proportionally controlling fluid flow out of the first expandable fluid chamber.

13. The method of claim 10 wherein the at least one expandable fluid chamber further comprises the steps of:

providing a first expandable fluid chamber adjacent one end of travel of the piston in the housing; and

providing a second expandable fluid chamber adjacent another end of travel of the piston in the housing.

14. The method of claim 13, wherein the pressure sensing step with at least one pressure sensor further comprises the steps of:

providing a first pressure sensor associated with the first expandable fluid chamber; and

providing a second pressure sensor associated with the second expandable fluid chamber.

15. The method of claim 13, wherein the position sensing step with at least one discrete position sensor further comprises the steps of:

providing a first position sensor located adjacent a midpoint of the fluid operated cylinder;

providing a second position sensor located adjacent one end of travel of the piston in the housing for providing soft stop deceleration of the piston prior to contact with an end wall of the housing defining one chamber; and

providing a third position sensor located adjacent an opposite end of travel of the piston in the housing for providing soft stop deceleration of the piston prior to contact with an end wall of the housing defining another chamber.

16. The method of claim 10, wherein the controlling step with a control program further comprises the step of:

initializing a home position when the piston is sensed by the at least one discrete position sensor to be located at the discrete centered position with respect to the housing.

17. The method of claim 10, wherein the controlling step with a control program further comprises the steps of:

calculating a required pressure in the at least one expandable fluid chamber for moving the piston a desired distance within the housing from the discrete centered position located midway with respect to the housing; and

controlling the at least two electrically actuated proportional flow valves to obtain the calculated pressure within the at least one expandable fluid chamber corresponding to the desired distance of movement for the piston within the housing.

18. The method of claim 10 further comprising the step of:

biasing the piston toward the discrete centered position with respect to the housing.

19. An apparatus for controlling a fluid operated cylinder having two fluid chambers defined by a piston located within a housing for movement between first and second end limits of travel, the apparatus comprising:

a multi-valve manifold having at least one fluid inlet port, at least one fluid outlet port and at least one fluid exhaust port;

four electrically actuated proportional flow valves, two valves connected to each port of the fluid operated cylinder to be controlled for selectively and proportionally controlling fluid flow into and out of the two fluid chambers of the fluid operated cylinder to be controlled;

two pressure sensors, one pressure sensor for measuring fluid pressure with respect to each chamber of the fluid operated cylinder to be controlled;

at least one discrete position sensor located adjacent a midpoint of the fluid operated cylinder to be controlled for sensing a discrete centered position of the piston within the cylinder to be controlled; and

a control program operably connected to the four valves, the two pressure sensors, and the at least one position sensor for controlling actuation of the

four valves in response to pressure measured by the two pressure sensors and in response to position measured by the at least one position sensor.

20. The apparatus of claim 19 further comprising:

the at least one discrete position sensor including a first position sensor located adjacent a midpoint of the operating stroke of the fluid operated cylinder to be controlled, a second position sensor located adjacent one end of travel of the piston in the housing for providing soft stop deceleration of the piston prior to contact with an end wall of the housing defining the first chamber, and a third position sensor located adjacent an opposite end of travel of the piston in the housing for providing soft stop deceleration of the piston prior to contact with an end wall of the housing defining the second chamber.

21. The apparatus of claim 19 further comprising:

the control program for initializing a home position when the piston is sensed by the at least one discrete position sensor located adjacent the midway position with respect to the housing.

22. The apparatus of claim 19 further comprising:

the control program for calculating a required pressure in each of the first and second expandable fluid chambers for moving the piston a desired distance within the housing from the discrete centered position located midway with respect to the housing, and for controlling the four electrically actuated proportional flow valves to obtain the calculated pressure within each of the first and second expandable fluid chambers corresponding to the desired distance of movement for the piston within the housing.